

In re Application of: HERZBERG  
Serial No.: 10/511,859  
Filed: October 18, 2004  
Office Action Mailing Date: January 17, 2008

Examiner: FLORES  
Group Art Unit: 2611  
Attorney Docket: 37476

**In the Claims:**

1-3 (Cancelled)

4. (Currently amended) A method according to claim 52[[1]], wherein connecting the line interface to the communication line comprises connecting at a point at least two times closer to one of the modems than the other modem.

5. (Currently amended) A method according to claim 52[[1]], wherein connecting the line interface to the communication line comprises connecting at a point at most two times closer to one of the modems than to the other modem.

6. (Currently amended) A method according to claim 52[[1]], wherein collecting data and other signals passing on the communication link comprises collecting without sending to either of the modems acknowledgment signals or any other modem tangible signals.

7. (Currently amended) A method according to claim 52[[1]], wherein displaying information on the modem connection comprises displaying the contents of one or more modem negotiation signals.

8. (Currently amended) A method according to claim 52[[1]], wherein displaying information on the modem connection comprises providing information on noise levels on the connection.

9. (Previously presented) A method according to claim 8, wherein providing information on noise levels on the connection comprises suggesting, by the processor, possible sources of the noise.

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10. (Currently amended) A method of analyzing the performance of a modem connection, comprising:

connecting a line interface to a communication link carrying data and other signals of a modem connection, between a pair of end modems;

collecting data and other signals passing on the communication link, between the end modems, through the line interface;

determining, by a processor, an information content of one or more data and other signals transmitted between the end modems, responsive to data and other signals collected through the line interface; and

displaying information on the modem connection, responsive to the determined information content, wherein displaying information on the modem connection comprises providing information on noise levels on the connection and showing cross-references between effects in upper layers and noise levels on the connection at specific times.

11. (Currently amended) A method according to claim 52[[1]], comprising determining, by the processor, information on the symbol mapping used by the connection, based on the collected data and other signals.

12. (Currently amended) A method according to claim 52[[1]], wherein displaying information on the modem connection comprises displaying information on signaling signals transmitted in parallel to data transmission.

13. (Currently amended) A method according to claim 52[[1]], comprising performing signal tests on test signals collected through the line interface and comparing the results of the tests to negotiation signals, collected through the line interface, reporting test results from one of the modems.

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14. (Cancelled)

15. (Currently amended) A method according to claim 5214, wherein injecting the noise comprises injecting noise in a manner which does not substantially interfere with a different connection passing on the communication link.

16. (Currently amended) A method of analyzing the performance of a modem connection, comprising:

connecting a line interface to a communication link carrying data and other signals of a modem connection, between a pair of end modems;

collecting data and other signals passing on the communication link, between the end modems, through the line interface;

injecting through the line interface noise which forces a retrain of the modem connection wherein injecting the noise comprises connecting a low impedance circuit, for at least some of the frequency bands carrying signals, to the communication link;

determining, by a processor, an information content of one or more data and other signals transmitted between the end modems, responsive to data and other signals collected through the line interface; and

displaying information on the modem connection, responsive to the determined information content.

17. (Cancelled)

18. (Currently amended) A method of analyzing the performance of a DSL modem connection, comprising:

connecting a line interface to a communication link carrying data and other signals of a modem connection, between a pair of end modems;

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collecting data and other signals passing on the communication link, between the end modems, through the line interface;

injecting through the line interface noise which forces a retrain of the modem connection, wherein the injected noise does not interfere with voice frequency bands of the communication link;

determining, by a processor, an information content of one or more data and other signals transmitted between the end modems, responsive to data and other signals collected through the line interface; and

displaying information on the modem connection, responsive to the determined information content.

19. (Cancelled)

20. (Currently amended) A method according to claim 52[[1]], comprising identifying changes in the operation of the modem connection responsive to the data and other signals collected through the line interface and providing suggested causes of the changes.

21. (Original) A method according to claim 20, wherein identifying changes comprises identifying a retrain.

22. (Previously presented) A method according to claim 20, wherein identifying changes comprises identifying a bit swap.

23. (Previously presented) A method according to claim 20, wherein providing suggested causes of the changes comprises identifying, for at least one change, a noise that caused the change.

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24. (Currently amended) A method according to claim 52[[1]], comprising identifying data retransmissions and providing suggested causes of the data retransmissions.
25. (Currently amended) A method according to claim 52[[1]], wherein displaying information on the ~~determined characteristics~~ modem connection comprises displaying a raw bit content of the data and other signals transmitted on the modem connection.
26. (Currently amended) A method according to claim 52 of analyzing the performance of a modem connection, comprising:  
~~connecting a line interface to a communication link carrying signals of a modem connection, between a pair of end modems;~~  
collecting modem negotiation signals passing on the communication link, between the end modems, through the line interface;  
analyzing the collected modem negotiation signals; and  
providing a warning on a possible tapping of the communication link, responsive to the analysis.
27. (Currently amended) A method according to claim 52[[1]], comprising extracting the data transmitted on the modem connection, from the data and other signals collected through the line interface.
28. (Cancelled)
29. (Currently amended) A performance analyzer according to claim 5328, comprising a low impedance shorting circuit adapted to short at least some of the frequencies of the communication link, responsive to a command from the processor.

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30-32 (Cancelled)

33. (Currently amended) A method according to claim 52 and further of forcing a  
~~retrain on a modem connection~~, comprising ~~[[;]]~~ determining at least one first  
frequency band to be disrupted, ~~[[;]]~~ and connecting to the communication link a  
~~communication line carrying the modem connection, between two end modems~~, a  
circuit which disrupts transmission of signals on the at least one first frequency band  
substantially without interfering with data and other signals of a second frequency  
band.

34. (Original) A method according to claim 33, wherein determining the at least one  
first frequency band to be disrupted comprises determining a frequency band  
including a pilot tone frequency band of the modem connection.

35-36 (Cancelled)

37. (Previously presented) A method according to claim 33, wherein connecting the  
disruption circuit comprises connecting a circuit which shorts the at least one first  
frequency band without shorting the second frequency band.

38. (Original) A method according to claim 33, wherein connecting the disruption  
circuit comprises connecting a circuit which injects noise at the at least one first  
frequency band.

39. (Currently amended) A method according to claim 52~~[[1]]~~, wherein determining  
the information content of the one or more data and other signals comprises  
determining a bit content.

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40. (Currently amended) A method according to claim 52[[1]], comprising determining a stage of the modem connection, responsive to the collected data and other\_signals.
41. (Currently amended) A method according to claim 45[[1]], wherein the only modem tangible signals transmitted on the connection during the collection of the signals through the line interface are generated by the end modems.
42. (Currently amended) A method according to claim 10[[1]], wherein at least some of the data and other\_signals collected through the line interface are generated by at least one of the pair of end modems without the line interface sending acknowledgment signals or any other modem tangible signals to either of the modems.
43. (Currently amended) A method according to claim 10[[1]], wherein the processor is not connected to the end modems other than through the line interface.
44. (Currently amended) A method according to claim 10[[1]], wherein collecting data and other signals passing on the communication link comprises collecting during a collection session in which data and other[signals are not injected through the line interface onto the communication link, except possibly noise adapted to cause a retrain, injected at specific times.
45. (Currently amended) A method of analyzing the performance of a modem connection, comprising:
- connecting a line interface to a communication link carrying data and other signals of a modem connection, between a pair of end modems;
  - collecting data and other signals passing on the communication link, between the end modems, through the line interface;

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determining, by a processor, an information content of one or more data and other signals transmitted between the end modems, responsive to data and other signals collected through the line interface; and

displaying information on the modem connection, responsive to the determined information content comprising:

providing information on noise levels on the connection; and

suggesting, by the processor, possible correlation between data retransmissions or connection retrains and noise.

46. (Currently amended) A method according to claim 18[[1]], wherein the information content comprises at least one value of a field of the one or more data and other signals.

47. (Currently amended) A method according to claim 18[[1]], wherein the information content comprises negotiation signal content.

48. (Currently amended) A method according to claim 18[[1]], and further comprising using a state machine for keeping track of the state of the modem connection, based, at least partly, on the determined information content.

49. (Currently amended) A performance analyzer according to claim 5328, wherein the information content comprises negotiation signal content.

50. (Currently amended) A performance analyzer according to claim 5328, wherein the information content comprises at least one value of a field of the one or more data and other signals.



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51. (Currently amended) A performance analyzer according to claim 5328 and further comprising a state machine, the state machine keeping track of the state of the modem connection based, at least partly, on the determined information content.

52. (New) A method of analyzing the performance of a DSL modem connection, comprising:

- connecting a line interface to a communication link carrying data and other signals of a modem connection, between a pair of end modems;

- collecting data and other signals passing on the communication link, between the end modems, through the line interface;

- injecting through the line interface noise, wherein the injected noise does not interfere with voice frequency bands of the communication link;

- determining, by a processor, an information content of one or more data and other signals transmitted between the end modems, responsive to data and other signals collected through the line interface; and

- displaying information on the modem connection, responsive to the determined information content.

53. (New) A modem connection performance analyzer comprising:

- a line interface configured for:

- connecting to a communication link carrying data and other signals of a modem connection, between a pair of end modems;

- collecting data and other signals passing on the communication link, between the end modems; and

- injecting through the line interface noise which forces a retrain of the modem connection, wherein the injected noise does not interfere with voice frequency bands of the communication link, and

- a processor configured for:

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determining an information content of one or more data and other signals transmitted between the end modems, responsive to data and other signals collected through the line interface; and

displaying information on the modem connection, responsive to the determined information content.

54. (New) A method according to claim 10, wherein the information content comprises at least one value of a field of the one or more data and other signals.

55. (New) A method according to claim 10, wherein the information content comprises negotiation signal content.